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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,206	06/20/2001	William W. Chen	CRC-138	4617
7590 01/29/2004			EXAMINER	
Larry I. Golden Square D Company 1415 South Roselle Road Palatine, IL 60067			KITOV, ZEEV	
			ART UNIT	PAPER NUMBER
			2836	

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/885,206

Applicant(s)

CHEN ET AL.

Examiner

Zeev Kitov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 4, 6 - 11, 13 - 18, 20 - 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 4, 6 - 11, 13 - 18, 20 - 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on November 6, 2003. Claims 5, 12 and 19 are deleted; Claims 1, 6, 7, 8, 13, 14, 15, 20, 21 and 22 are amended. Examiner further acknowledges reception of the replacement page including corrected Figures 1A and B. The corrections are approved. Amendment and arguments have overcome rejections under 112, 2nd paragraph. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

1. Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

a) Claims 22 – 25, 1 – 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan (CH 610,436, #1,569,188 in IDS) in a view of Horsma et al. (US 4,177,376).

Regarding Claim 22, Jordan discloses following elements of the claim including electrically connecting a positive temperature coefficient resistivity element (element 3 in Fig. 1) in series with a secondary windings of the transformer (elements 2 in Fig. 1). Jordan further discloses connection of the PTC in series with the primary winding of the

transformer (page 2, lines 57 – 60). However, it does not disclose a polymer PCT able to increase its resistivity at least 100 times at ambient temperature upon occurrence of an activation event. Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59) able to increase its resistivity at least 100 times at ambient temperature upon occurrence of an activation event (see Fig. 1 and 2).

Both patents have the same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Jordan according to teachings of Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

Regarding Claim 23 and 24, Jordan discloses an activation event as an overcurrent short circuit condition (page 1, col. 2, last paragraph).

Regarding Claim 25, Jordan discloses the activation event as a rise in transformer temperature (col. 2, begin of last paragraph on page 1 – col. 1, line 1, page 2). As to activation of the PTC element by an external heating, the Jordan structure includes compound making a thermal connection between PTC resistor (element 3 in Fig. 1) and the transformer body. Therefore, the PTC resistor is affected by an ambient temperature.

b) Regarding Claims 1, and 6, Jordan discloses a power transformer having a transformer coil body having a primary and secondary windings and a temperature resistivity element (element 3 in Fig. 1) electrically connected to the secondary winding

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of the transformer and not connected to the other winding. It further discloses connection of the PTC element in series with the primary winding of the transformer (page 2, lines 57 – 60). His transformer has a core indicated in Fig. 1 by its symbol located between two coils (elements 1 and 2 in Fig. 1). Additionally, it inherently must have a metallic core (55VA transformer can not be built without metallic core).

However, it does not disclose a polymer made temperature resistivity element. Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Jordan according to Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

Regarding Claim 2, Jordan discloses an activation event as a short circuit condition (col. 2, last paragraph, page 1 – col. 1, line 1, page 2).

Regarding Claim 3, Jordan discloses an activation event is an overcurrent condition (col. 2, last paragraph, page 1 – col. 1, line 1, page 2).

Regarding Claim 4, Jordan discloses the activation event as a rise in transformer temperature (col. 2, last paragraph, page 1 – col. 1, line 1, page 2). As to activation of the PTC element by an external heating, the Jordan structure includes compound making a thermal connection between PTC resistor (element 3 in Fig. 1) and the

transformer body. Therefore, the ambient temperature is able to activate the PTC resistor.

Regarding Claims 7, Jordan discloses the positive temperature resistivity element electrically connected to the secondary winding of the transformer coil body (element 3 in Fig. 1). As to the positive temperature resistivity element being made of polymer, Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59).

c) Claims 8 - 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan in a view of Horsma et al. and further in a view of Innes (US 5,493,101).

As per Claim 8, in addition to limitations of Claim 1, it adds a new limitation of a light emitting diode, not disclosed by Jordan or Horsma. Innes discloses a light emitting diode (element 13 in Fig. 1) electrically coupled to the positive temperature resistivity element (element 10 in Fig. 1) to signal activation of the polymer positive temperature resistivity element (col. 5, line 8 through col. 6, line 8). Both patents have the same problem solving area, namely protecting electronic equipment with help of PTC.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified solution of Jordan according to Innes, because as Innes states (col. 2, lines 15 – 40), such LED indication will help to make the PTC truly reusable.

Regarding Claim 9, Jordan discloses an activation event as a short circuit condition (col. 2, last paragraph, page 1 – col. 1, line 1, page 2).

Regarding Claim 10, Jordan discloses an activation event as an overcurrent condition (col. 2, last paragraph, page 1 – col. 1, line 1, page 2).

Regarding Claim 11, Jordan discloses the activation event as a rise in transformer temperature (col. 2, last paragraph, page 1 – col. 1, line 1, page 2). As to activation of the PTC element by an external heating, the Jordan structure includes compound making a thermal connection between PTC resistor (element 3 in Fig. 1) and the transformer body. Therefore, the ambient temperature is able to activate the PTC resistor.

Regarding Claim 13, Jordan discloses the PTC element connected to the primary winding of the transformer (page 2, lines 57 – 60).

Regarding Claim 14, Jordan discloses the PTC element connected to the secondary winding of the transformer (element 3 in Fig. 1).

d) Claims 15 - 18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan in a view of Horsma et al. and further in a view of Mody (US 5,667,711).

As per Claim 15, in addition to limitations of Claim 1, it adds the limitation of a solenoid controlled switch not disclosed by either Jordan or Horsma. Mody discloses the solenoid (element 34 in Fig. 2) electrically connected in parallel with the positive temperature coefficient resistivity element (element 32 in Fig. 2) creating a magnetic field when

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current flows through the solenoid and a switch (element 36 in Fig. 2) mechanically linked to said solenoid and electrically connected in series with the protected element, the switch activated into an open position to eliminate leakage current flow to the protected element upon activation of said positive temperature resistivity element and current flow through the protected element (transformer). Both patents have the same problem solving area, namely protecting electrical equipment by using PTC. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Jordan solution with a help of solenoid and switch of Mody, because as Mody states (col. 2, line 57 through col. 3, line 7), it reduces the parts count and space requirements in comparison with other trip mechanism solutions. Additionally since the current normally does not flow through the solenoid, it reduces power dissipation. And as well known in the art, due to a relay amplification mechanism, the switch driven by the solenoid is able of controlling (protecting) the load carrying the current much higher than that flowing through the PTC element and solenoid.

Regarding Claim 16, Jordan discloses an activation event as a short circuit condition (col. 2, last paragraph, page 1 – col. 1, line 1, page 2).

Regarding Claim 17, Jordan discloses an activation event as an overcurrent condition (col. 2, last paragraph, page 1 – col. 1, line 1, page 2).

Regarding Claim 18, Kruger discloses the activation event as a rise in transformer temperature (col. 2, last paragraph, page 1 – col. 1, line 1, page 2). As to activation of the PTC element by an external heating, the Jordan structure includes

compound making a thermal connection between PTC resistor (element 3 in Fig. 1) and the transformer body. Therefore, the ambient temperature is able to activate the PTC resistor.

Regarding Claim 20, Jordan discloses the PTC element connected to the secondary winding of the transformer (element 3 in Fig. 1).

Regarding Claim 21, Jordan discloses the positive temperature resistivity element electrically connected to the secondary winding of the transformer coil body (element 3 in Fig. 1).

2. Response to Arguments.

The Applicant's Arguments have been given full consideration. However, the Arguments are moot in a view of the new grounds for rejection.

3. Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

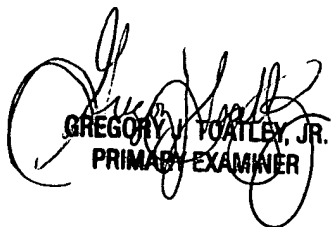
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (703) 305-0759. Due to moving to a new location on January 28, 2004 the number will change to (571) 272-2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (703) 308-3119. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Z.K.
01/22/2004


GREGORY J. TOATLEY, JR.
PRIMARY EXAMINER